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### Abstract

The invention relates to an apparatus for growing thin films onto a substrate by exposing the substrate to alternate surface reactions of vapor-phase reactants for forming a thin film onto the substrate by means of said surface reactions. The apparatus comprises a vacuum vessel (1), a reaction chamber (2) with a reaction space into which the substrate can be transferred and which has infeed channels (6) for feeding therein the reactants used in said thin film growth process, as well as outlet channels (4) for discharging gaseous reaction products and excess reactants. According to the invention, said reaction chamber comprises a base part (9, 10) mounted stationary in respect to the interior of said vacuum vessel (1) and a movable part (18) adapted to be sealably closable against said base part of said reaction chamber. The invention makes it possible to improve the cleanliness of the substrate load chamber and to reduce the degree of substrate contamination. The apparatus is intended for use in the fabrication of thin films by means of the ALE method for semiconductor layer structures and display units.